

WHAT IS CLAIMED IS:

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1. A surgical instrument for use with an electro-mechanical surgical device, comprising:

a coupling configured to couple the surgical instrument with the electro-mechanical surgical device; and

a memory unit configured to store data representing at least one parameter relating to the surgical instrument;

wherein the coupling includes a data connector configured to connect the memory unit with the electro-mechanical surgical device.

2. The surgical instrument according to claim 1, further comprising at least one rotatable drive shaft configured to couple with a respective drive shaft of the electro-mechanical surgical device.

3. The surgical instrument according to claim 1, further comprising a first rotatable drive shaft and a second rotatable drive shaft, each of the drive shafts being configured to couple with a respective drive shaft of the electro-mechanical surgical device.

4. The surgical instrument according to claim 1, wherein the first data is readable by a control system of the electro-mechanical surgical device.

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5. The surgical instrument according to claim 1, wherein the data connector is configured to electrically and logically connect the memory unit to a control system of the electro-mechanical surgical device.

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6. The surgical instrument according to claim 1, wherein the coupling is configured to detachably attach the surgical instrument to the electro-mechanical surgical device.

7. The surgical instrument according to claim 1, wherein the surgical instrument includes a surgical stapler/cutter instrument.

8. The surgical instrument according to claim 7, wherein the surgical stapler/cutter instrument includes an anvil portion and a staple driver/cutter portion.

9. The surgical instrument according to claim 8, further comprising a first rotatable drive shaft configured to open and close the anvil portion and a second rotatable drive shaft configured to drive the staple driver/cutter portion.

10. The surgical instrument according to claim 1, wherein the at least one parameter includes at least one of a usage data, a serial number data and a type of the surgical instrument.

11. The surgical instrument according to claim 1, further comprising:
a least one driven element; and
a gear arrangement configured to couple a drive shaft of the electro-mechanical surgical device to the at least one driven element, the gear arrangement being configured to convert a high-speed rotation of the drive shaft to drive the at least one driven element at a high-torque.

12. A surgical instrument for use with an electro-mechanical surgical device, comprising:

a coupling configured to couple the surgical instrument with the electro-mechanical surgical device; and

a memory unit configured to store data representing a usage of the surgical instrument;

wherein the coupling includes a data connector configured to connect the memory unit with the electro-mechanical surgical device.

Same as 12
13. The surgical instrument according to claim 12, further comprising at least one rotatable drive shaft configured to couple with a respective drive shaft of the electro-mechanical surgical device.

Same as 13
14. The surgical instrument according to claim 12, further comprising a first rotatable drive shaft and a second rotatable drive shaft, each of the drive shafts being configured to couple with a respective drive shaft of the electro-mechanical surgical device.

Same as 14
15. The surgical instrument according to claim 12, wherein the first data is readable by a control system of the electro-mechanical surgical device.

16. The surgical instrument according to claim 15, wherein the control system is configured to limit usage of the surgical instrument in accordance with the usage data.

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17. The surgical instrument according to claim 12, wherein the data connector is configured to electrically and logically connect the memory unit to a control system of the electro-mechanical surgical device.

Same as 5

18. The surgical instrument according to claim 12, wherein the coupling is configured to detachably attach the surgical instrument to the electro-mechanical surgical device.

Same as 6

19. The surgical instrument according to claim 12, wherein the surgical instrument includes a surgical stapler/cutter instrument.

Same as 7

20. The surgical instrument according to claim 19, wherein the surgical stapler/cutter instrument includes an anvil portion and a staple driver/cutter portion.

Same as 8

21. The surgical instrument according to claim 20, further comprising a first rotatable drive shaft configured to open and close the anvil portion and a second rotatable drive shaft configured to drive the staple driver/cutter portion.

Same as 9

22. The surgical instrument according to claim 12, further comprising:
a least one driven element; and
a gear arrangement configured to couple a drive shaft of the electro-mechanical surgical device to the at least one driven element, the gear arrangement being configured to convert a high-speed rotation of the drive shaft to drive the at least one driven element at a high-torque.

Same as 11

FOR THE REASON

23. A surgical instrument for use with an electro-mechanical surgical device, comprising:

a coupling configured to couple the surgical instrument with the electro-mechanical surgical device; and

a memory unit configured to store data representing a serial number of the surgical instrument;

wherein the coupling includes a data connector configured to connect the memory unit with the electro-mechanical surgical device.

24. The surgical instrument according to claim 23, further comprising at least one rotatable drive shaft configured to couple with a respective drive shaft of the electro-mechanical surgical device.

25. The surgical instrument according to claim 23, further comprising a first rotatable drive shaft and a second rotatable drive shaft, each of the drive shafts being configured to couple with a respective drive shaft of the electro-mechanical surgical device.

26. The surgical instrument according to claim 23, wherein the first data is readable by a control system of the electro-mechanical surgical device.

27. The surgical instrument according to claim 23, wherein the data connector is configured to electrically and logically connect the memory unit to a control system of the electro-mechanical surgical device.

FOOTNOTES
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28. The surgical instrument according to claim 23, wherein the coupling is configured to detachably attach the surgical instrument to the electro-mechanical surgical device.

29. The surgical instrument according to claim 23, wherein the surgical instrument includes a surgical stapler/cutter instrument.

30. The surgical instrument according to claim 29, wherein the surgical stapler/cutter instrument includes an anvil portion and a staple driver/cutter portion.

31. The surgical instrument according to claim 30, further comprising a first rotatable drive shaft configured to open and close the anvil portion and a second rotatable drive shaft configured to drive the staple driver/cutter portion.

32. The surgical instrument according to claim 23, further comprising:
a least one driven element; and
a gear arrangement configured to couple a drive shaft of the electro-mechanical surgical device to the at least one driven element, the gear arrangement being configured to convert a high-speed rotation of the drive shaft to drive the at least one driven element at a high-torque.

33. An electro-mechanical surgical device, comprising:
at least one rotatable drive shaft;
a motor arrangement configured to rotate the at least one rotatable drive shaft from a proximal end thereof;

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a first gear arrangement disposed at a distal end of the rotatable drive shaft;
and

at least one element driven by the gear arrangement;

wherein the gear arrangement is configured to convert a high-speed rotation of the rotatable drive shaft to drive the at least one driven element at a high-torque.

34. The electro-mechanical surgical device according to claim 33, further comprising a surgical attachment attachable to the distal end of the rotatable drive shaft, the surgical attachment including the at least one element.

35. The electro-mechanical surgical device according to claim 34, wherein the first gear arrangement is disposed in the surgical attachment.

36. The electro-mechanical surgical device according to claim 34, wherein the surgical attachment includes a circular surgical stapler attachment.

37. The electro-mechanical surgical device according to claim 36, wherein the at least one element includes at least one of an anvil of the circular surgical stapler attachment and a staple driver/cutter of the circular surgical stapler attachment.

38. The electro-mechanical surgical device according to claim 33, wherein the at least one-rotatable drive shaft includes a first rotatable drive shaft and a second rotatable drive shaft, the at least one element including a first element driven by the first rotatable drive shaft and a second element driven by the second rotatable drive shaft, the gear arrangement including a first gear system configured

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to convert a high-speed rotation of the first rotatable drive shaft to drive the first driven element at a high-torque and a second gear system configured to convert a high-speed rotation of the second rotatable drive shaft to drive the second driven element at a high-torque.

39. The electro-mechanical surgical device according to claim 38, wherein the motor arrangement includes a first motor configured to rotate the first rotatable drive shaft and a second motor configured to rotate the second rotatable drive shaft.

40. The electro-mechanical surgical device according to claim 38, further comprising a surgical attachment detachably attachable to the distal end of the first and second rotatable drive shafts, the surgical attachment including the first and second elements.

41. The electro-mechanical surgical device according to claim 40, wherein the first element includes an anvil and the second element includes a staple driver/cutter.

42. The electro-mechanical surgical device according to claim 33, further comprising a second gear arrangement disposed between the motor arrangement and the at least one rotatable drive shaft, the second gear arrangement configured to convert a high torque transmitted by the motor arrangement to rotate the at least one rotatable drive shaft at the high speed.

43. The electro-mechanical surgical device according to claim 33, wherein the first gear arrangement includes at least one of a spur gear arrangement, a

planetary gear arrangement, a harmonic gear arrangement, cycloidal drive arrangement and an epicyclic gear arrangement.

44. The electro-mechanical surgical device according to claim 33, wherein each of the first gear arrangement and the second gear arrangement includes at least one of a spur gear arrangement, a planetary gear arrangement, a harmonic gear arrangement, cycloidal drive arrangement and an epicyclic gear arrangement.

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